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IN TWO SECTIONS

Section I

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IN THIS ISSUE

Practice in Accounting for Raw Materials, by Research and Service Department 785

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EDITORIAL DEPARTMENT NOTE

In an article on "Cost or Market, Whichever is Lower" in the Bulletin for October 15, 1933, William R. Donaldson said with respect to inventory valuation methods: "Practices followed in one enterprise in an industry are quite dissimilar to those of another enterprise in the same industry. Each contends that its concept of pricing is correct and the other wrong. Some companies are decidedly conservative and keep values as low as they dare, deducting reserves against inventories for all sorts of contingencies; others lean toward liberal, almost inflated valuations. Yet both companies can with logic defend their prices as representing 'cost' or 'market.'" At the International Cost Conference at Cincinnati last June, Maurice E. Peloubet pointed out the great differences in profits which can result from the application of various methods of inventory valuation. The present much-debated surtax on undistributed profits has forced upon the entire business community a realization of the importance of the inventory valuation problem.

Because of the current importance of this problem, Harry E. Howell, National Director in charge of Research, decided that some factual information as to the inventory methods actually in use would be desirable. In outlining a research study of the subject it was decided that to cover the entire field would result in too extensive a questionnaire and produce results lacking in clearness. Accordingly, the study was limited to certain phases of accounting for raw materials. The information obtained through the cooperation of a large group of N. A. C. A. members is most interesting, and it is hoped that the present summary will prove helpful as an indication of the practices generally followed in accounting for raw material.

Also it is felt that the subject matter of this study should provide a basis for interesting chapter meetings and forum discussions dealing with the practices followed by the concerns represented in each chapter.

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MARCH 15, 1937

PRACTICE IN ACCOUNTING FOR RAW MATERIALS

Research and Service Department,
National Association of Cost Accountants

PART I—VALUATION OF RAW MATERIALS

THIS PAPER is a report of the findings in a recent questionnaire study carried on by the Research and Service Department at National Headquarters under the direction of Harry E. Howell, National Director in charge of Research. The data which are summarized here were obtained from members' replies to the questionnaire shown on page 786. Ten copies of this questionnaire were sent to each chapter secretary and distributed by the secretaries to a selected list of the members of such chapters. Over two hundred members returned filled-in questionnaires to National Headquarters, but because a few of these related to non-manufacturing companies only 197 replies are included in the present report. The number of replies received, the care with which they were filled out and the additional explanatory comments on many of the questionnaires is an indication of the spirit of cooperation which prevails in the Association.

Charging Purchases to the Raw Material Account

The replies to the first question can be summarized as follows:

Basis for Charging Purchases to Raw Material Account

	No. of Co's.	*Per Cent of Total*
1. At invoice price	177	89.9
2. At standard cost	17	8.6
3. At both actual and standard cost (basic standard cost)	3	1.5
Total reporting	197	100.0

It should be noted that the above is no indication of the extent to which standard costs are used by manufacturing concerns, since under many standard cost setups materials are recorded at invoice price when received, but charged to process at standard when issued. It is interesting to note that 9 of the 17 companies which entered purchases at standard, report the use of standard costs in valuing the raw materials for balance sheet purposes. In only two

THE VALUATION OF RAW MATERIAL INVENTORIES

N. A. C. A. Research Study

(Check the correct answers)

1. Do you charge purchases to the raw material account at:
   - A. Invoice price ( )
   - B. Standard cost ( )
   - C. Some other base (Please explain) ..... ( )

   .....
   .....

2. Do you include in the inventory value of raw materials:
   - A. Freight and cartage in ( )
   - B. Purchasing department expense ( )
   - C. Receiving and storing expense ( )
   - D. Any other costs (Please list) ..... ( )

   .....
   .....

3. What portion of your inventory of raw materials is controlled through perpetual inventory records? .....%.

4a Do you check your perpetual inventory records by physical count and measurement throughout the year? Yes ( ) No ( )

4b If the answer to (a) is "yes," do you find a complete annual or semi-annual physical inventory necessary? Yes ( ) No ( )

5. Do you charge raw material into process:
   - A. On a first-in, first-out cost basis ( )
   - B. On an average cost basis ( )
   - C. On a standard cost basis ( )
   - D. On a last-in, first-out basis ( )
   - E. On some other basis (Please explain) ..... ( )

   .....
   .....

6. For balance sheet purposes, do you value your raw material at:
   - A. Cost or market, whichever is lower ( )
   - B. Standard cost ( )
   - C. Retail method ( )
   - D. Base or normal stock method ( )
   - E. Some other base (Please explain) ..... ( )

   .....
   .....

7. Do you make use of an inventory reserve for valuing raw materials on the balance sheet? Yes ( ) No ( )
   - A. Please state purpose of this reserve: .....

     .....
     .....
     .....
   - B. What account is charged when reserve is set up?

     .....

Name .....
Company .....
Industry .....

cases is there any indication that the standard cost valuations are reduced to market when the standard is higher than market.

Ten of the 20 companies which enter raw material at standard or at both standard and actual report the use of inventory reserves for valuing raw materials on the balance sheet, but in only three cases is there an indication that the purpose of this reserve is to reduce standard costs to the lower of cost or market, when such figures are lower than standards.

Other Costs Included in the Inventory Value of Raw Materials

The replies to the second question brought a mild surprise by indicating that a large majority of the reporting companies include inward freight and cartage as an element of raw material costs. On the other hand, other costs such as purchasing, receiving and storing are not recorded as raw material costs in the great majority of cases. The figures are shown below:

Other Costs Included in the Inventory Value of Raw Materials

Item	*No. of Companies Including*	*Per Cent of Total Companies Reporting*
Freight and cartage in	180	91.4%
Receiving and storing expense	25	12.8
Purchasing Department expense	7	3.6
Unloading expense	4	2.0
Interest on borrowed capital	2	1.0
Allowance for shrinkage	2	1.0
Container cost	1	.5
Sampling and laboratory expense	1	.5

Perpetual Inventory Records

The extent to which raw materials are controlled by perpetual inventory records is evidenced by the answers to the third question, which can be summarized as follows:

Use of Perpetual Inventory Records

Per Cent of Raw Material Controlled	*No. of Companies*	*Per Cent of Total*
100%	133	67.5%
90-99%	24	12.2
50-89%	16	8.1
Under 50%	11	5.6
Not used	13	6.6
Totals	197	100.0%

Under a perpetual inventory system it is usually considered desirable to frequently check the goods actually on hand with cor-

responding stores records and to then adjust inventories for discrepancies. It has often been stated that where this is regularly done the taking of a physical inventory at the end of the accounting period is unnecessary. Questions 4a and 4b were designed to determine the extent of current practice in this respect. It is apparent from the answers to a supplementary questionnaire which will be referred to later that question 4a was not clearly stated and was misunderstood by some members who thought that the taking of monthly, quarterly, or semi-annual physical inventories and the checking of such inventories against the book records justified a "yes" answer to this question.

Since this question was intended to determine the proportion of companies which carried on a continuous checking of their raw material records, it is likely that the results obtained from this question are distorted and they will not be reported here, except to state that a great majority of the companies included in this study report that a continuous check of the raw material records is carried on. Undoubtedly a substantial majority would have made this reply if the question had been more accurately stated.

Are Physical Inventories Necessary?

When raw materials on hand are controlled by perpetual inventory records and these records are checked throughout the period by comparison with the actual quantities on hand, is it necessary to take a complete physical inventory at the end of the accounting period? Question 4b was designed to throw some light on this question and the information obtained is most interesting. In order to make analysis possible it was found necessary to classify the replies received into seven groups as shown below:

Physical Inventories Under a Perpetual Inventory System

Group	*Portion of Raw Materials Controlled by Stores Records*	*Is a continuous check made?*	*Do you find a Physical Inventory Necessary?*	*No. of Companies*
1	100%	Yes	No	43
2	Less than 100%	Yes	No	12
3	100%	Yes	Yes	65
4	100%	Partial	Yes	6
5	Less than 100%	Yes	Yes	38
6	100%	No	Yes	19
7	Less than 100%	No	Yes	14
				197

The figures for the first three groups are the most significant. It is logical that the companies in Group 4 should find physical inventories necessary, since only a partial check of inventory records is carried on during the period. In the case of the companies in Group 5, the fact that the entire raw material inventory is not controlled by stores records probably explains the necessity for physical inventories, although it would be interesting to know whether in these cases a complete physical inventory is necessary. Since the companies in Groups 6 and 7 report no inventory checking during the period, the reason why physical inventories are necessary is obvious.

The information secured from the companies in Groups 1, 2 and 3 is conflicting. If 43 companies with 100% of raw materials controlled through inventory records and 12 companies with partial control find that a continuing check against these records throughout the accounting period makes physical inventories unnecessary, why should 65 other companies with 100% control and a continuous testing throughout the period find physical inventories necessary? This is the question which was propounded to the 65 members whose replies placed them in Group 3 above. The results of this supplementary questionnaire are presented in the second part of this report. In addition to the information given there, some of the comments relating to question 4b of the first questionnaire are quoted below:

"Personal opinion is that periodic checks are more accurate and that with them annual inventories could and should be abolished." (Reply No. 51)

"Physical inventory not needed, but one is taken as a safety measure, not because of variations." (Reply No. 24)

"Book inventory used, as same is adjusted for discrepancies developed by perpetual check monthly." (Reply No. 67)

"Physical inventory not necessary, but we take one annually." (Reply No. 138)

"Physical inventory taken *at present.*" (Reply No. 139)

"A physical inventory is not necessary but we take one annually for policy and audit reasons." (Reply No. 145)

Bases Used in Charging Raw Material into Process

In charging raw material into work in process the methods used by the reporting companies were as follows:

Methods Used in Charging Raw Material Into Process

Method	*No. of Companies*	*Per Cent of Total*
Average cost basis	95	45.4
First-in, first-out basis	57	27.3
Standard cost basis	42	20.1
Actual cost basis	9	4.3
Last-in, first-out basis	5	2.4
Highest cost first	1	.5
	209	100.0

In replying to this question, 10 members reported using two or more methods, and two members failed to answer the question. In the above tabulation each method reported is counted, which explains why the total number of answers to this question are in excess of the number of companies reporting.

It is interesting to note that the use of the last-in, first-out method is reported by a manufacturer of heavy machinery (for part of inventory only), by a manufacturer of business machines, by an oil company, by a manufacturer of electrical equipment, and by a fabricator of base and precious metals. Apparently this method is not limited to the petroleum industry or similar industries which have high raw material costs for basic raw materials. There were not a sufficient number of such industries included in this study to give any indication of the extent to which this plan has been adopted by oil companies, tanneries, metal refineries and similar industries.

Valuation of Raw Materials for Balance Sheet Purposes

As was to be expected the vast majority of companies were reported as valuing their raw material inventories at cost or market, whichever was lower, for balance sheet purposes. The chief interest in the tabulation which follows is in the nature of the exceptions from this recognized rule.

Balance Sheet Valuation of Raw Materials

Basis	*No. of Companies*	*Per Cent of Total*
Cost or market, whichever is lower...	172	87.3
Standard cost	9	4.6
Actual cost	6	3.1
Basic or normal value	4	2.0
Average cost	4	2.0
Miscellaneous	2	1.0
	197	100.0

The basic or normal stock method is reported in use by a manufacturer of industrial instruments, a copper and brass fabricator, a cotton textile company and a metal fabricator. The manufacturer of industrial instruments reports using this basis for the valuation of the entire raw material inventory. The copper and brass company uses it for copper and zinc only, but values "copper and zinc in the *entire* inventory at 5 cents delivered and 3 cents St. Louis respectively." The cotton textile company uses the basic figure "provided it is not too much higher than market and depending on the market trend since closing date." This company uses an inventory valuation reserve upon occasions. The metal fabricator reports that "normal stocks are valued at the base price, and the inventory in excess of normal at cost or market, whichever is lower." This company uses an inventory valuation reserve "to maintain a normal stock at a normal price and to provide for abnormal fluctuations in market prices."

Use of Raw Material Inventory Valuation Reserves

Of the 197 companies covered in this study 46 reported the use of raw material inventory valuation reserves. The various purposes for which reserves were provided is shown in the tabulation on page 792. The number of purposes listed is in excess of the number of companies reporting because some companies use such reserves for more than one purpose. A summary of the accounts which are charged at the time the reserves are set up is also shown.

It is rather surprising that the use of a reserve to reduce the inventory from cost to market is not more general when we consider that the majority of reporting companies carry their raw material accounts at cost, but use the cost or market basis for balance sheet purpose. When one recalls that perpetual inventory

INVENTORY RESERVES—PURPOSES AND ACCOUNTS CHARGED

Purpose:	No. of Co's.	Accounts Charged when Reserve Set Up: Cost of Sales	Mfg. Cost	Profit and Loss	Unclassified Charges
To reduce cost to market	9	2	1	1	Other income and expense Inventory adjustments Inventory shrinkage adjustment Loss on adjustment of R.M. Inv. to market value Not answered
To reduce standard to market	3				Variation in raw material cost Allowance for contingency Price variances
To reduce normal stock to market	2			2	
To allow for shrinkage	9	3	3		Inventory reserve(?) Inventory adjustment Work in process
To provide for obsolescence	14	4	4	1	Obsolescence Other deductions Provision for loss on obsolete material Inventory adjustment Inventory shrinkage adjustments
To write down slow-moving stock	4	1	1	1	Not answered
To guard against losses from price declines	3		1	1	Capital account (Single proprietorship)
To adjust for difference between book and physical inventory	3	1		2	
To give a conservative valuation	2			1	Surplus
For tax purposes	1			1	
When market factors make hedge insecure	1				Deducted from final inventory value(?)
Totals	51	11	10	9	

systems are in use in most of the reporting companies, one wonders how the inventories can be reduced from cost to market without throwing the raw material account out of agreement with the stores records unless an inventory reserve is used. The same question arises in connection with companies using standard or basic values which are reduced to market when lower. It would seem that in all such cases the use of inventory valuation reserves would be useful.

Undoubtedly the presence of perpetual inventory systems accounts for the use of inventory reserves by the companies who use such reserves to provide for shrinkage, obsolescence, and losses from slow-moving stock. Where these losses have been definitely determined and related to specific raw materials the revised valuations can be entered in both the raw material account and the subsidiary stock records, but where the losses are estimated or not directly related to specific raw materials, the reduction in inventory valuation cannot be made in the raw material account without throwing it out of agreement with the stores records. A reserve seems indicated in these cases. The same is true if these are estimated future losses from obsolescence or from anticipated price declines.

To summarize, the most usual purposes for which valuation reserves are applied against raw material inventories are:

1. To reduce cost value, standard value, or normal value of inventory to market, when lower.
2. To recognize losses due to shrinkage, obsolescence and slow-moving stock, which losses have not been related to specific raw materials.
3. In anticipation of future losses due to the above causes or to price declines.

It is apparent from the tabulation on page 792 that there is little agreement on the proper treatment of the charge at the time an inventory valuation reserve is set up. Cost of sales is charged to reduce the inventory from cost to market, to take care of losses due to shrinkage, obsolescence and slow-moving stock, and to make adjustments for the difference between the book inventory and the physical inventory. Manufacturing cost, and thus the inventory, is charged for all of these purposes except the last, and, in addition,

to provide against losses from price declines. And profit and loss is charged for all of the same purposes as the other two.

Apparently there is need for some agreement on principles here. The following is suggested as a possible test:

1. Is the provision being made for a loss or for an expense which can be capitalized in inventory? Unless the cost represents a proper addition to the valuation of goods in process and finished goods it should not be charged to manufacturing cost.
2. Is the provision a responsibility of the manufacturing division or of the general administration? If a responsibility of the manufacturing division a charge to cost of sales would seem to be justified; if a responsibility of the general administration a charge against profit and loss is in order.

Some of the comments made by members in replying to this question are interesting. One member in reporting that a reserve was used to reduce the inventory from cost to market reported that "such a reserve is not shown on the balance sheet but is carried as contra account in the inventory accounts." Another member reports that in order to provide for slow-moving materials the "inventories are aged monthly and reserve set up."

The most conservative practice noticed is a case where a 15% reserve is applied against all inventories. This reserve is "created by a direct charge to profits and built up by a policy of overcosting by increasing cost of sales billed."

An interesting procedure is reported by a company which carries its raw materials at standard cost on its books, but uses cost or market, whichever is lower, for balance sheet purposes. The reserve is used in this case "to bring standard to cost or market and to forecast profits during the year." The procedure followed by the company is illustrated by the following entries:

At time of purchase:		
Inventory at Standard	$10.00	
Purchases		$8.00
Cost/Market Reserve		2.00
At time of sale:		
Cost of Sales at Standard	10.00	
Inventory at Standard		10.00
Cost/Market Variance	2.00	
Price Variance		2.00

In this case the Cost/Market Reserve always reflects the balance of the price variance in inventory.

Inventory Practice in Specific Industries

One often hears the statement that cost accounting practice varies widely because of the differing requirements of various industries. Had it been possible, it would have been interesting to determine the extent to which the variations in practice which were noted in this study were due to the differing requirements of the industries represented. Because of the large number of industries included in the present study, the representation of each industry was not sufficiently large to make possible any accurate analysis of this sort. However, it is interesting to note certain variations in practice between the manufacturers of machinery and the iron and steel companies which are represented. These two groups were selected for study because they are the two groups with the largest representation.

Of the 36 reporting companies in the machinery manufacturing industry, 5 entered purchases in the raw materials account at standard, while 6 used standard costs in pricing material charged to process. Of the 34 iron and steel companies studied, 3 entered purchases in the raw material account at standard, while 7 used standard costs in pricing material charged to process. Stated on a percentage basis in comparison with all companies reporting, this shows:

Percentage of Companies Using Standard Cost

	All Companies	*Machinery Manufacturers*	*Iron and Steel Companies*
In entering purchases ..	8.6%	13.9%	9%
In charging material to process	20.1	14.3	20

If the samples studied can be taken as representative, the above would seem to indicate that, while standard costs are not used as generally in the machinery manufacturing companies as in manufacturing companies as a whole, the practice of entering purchases at standard is more common in machinery manufacturing companies.

It would seem also that companies manufacturing machinery are more successful than the average in doing away with physical inventories under perpetual inventory systems. Eighteen out of

36, or 50%, of the machinery manufacturing companies reported that physical inventories were unnecessary, compared with 27.9% of the 197 companies from all types of manufacturing companies reporting them unnecessary.

Another interesting comparison relates to the prevalence of the first-in, first-out method as compared with the average cost method in charging material to process in the industries studied. The percentage figures follow:

Use of First-in, First-out and Average Cost Basis Compared

	All Companies	*Machinery Manufacturers*	*Iron and Steel Companies*
First-in, First-out basis	27.3%	45%	17%
Average cost basis	45.4	33.3	60

This would seem to indicate that the first-in, first-out method is more popular in the machinery manufacturing industries than in industry in general, while the use of average cost as a basis for charging material into process is more generally favored by iron and steel companies.

Part II—The Need For Physical Inventories

As stated in Part I of this report, 65 of the 197 members whose replies are included in this study reported that they considered physical inventories necessary where perpetual inventory records covering 100% of their raw materials were in use and were proved regularly by actual count and measurement. These replies contrasted with the replies of 43 members with perpetual inventory records for 100% of their raw materials and 12 members with similar records for less than 100% who considered a physical inventory unnecessary. In an effort to obtain more light on this subject and to determine the reasons for this difference of opinion the questionnaire shown on page 797 was sent to each of the 65 members who had stated that they considered physical inventories necessary. Replies were received from 50 of this group.

The information obtained was so varied that it has been found impossible to express the findings quantitatively. Moreover, the individual comments obtained by this questionnaire are so interesting and informative that it was thought desirable to present them

THE NECESSITY FOR PHYSICAL INVENTORIES UNDER A PERPETUAL INVENTORY SYSTEM

Supplement to N. A. C. A. Study of Raw Material Valuation

Note that reference is to *Raw Materials* only

1. On an average how many times per year do you check the quantity of each item of raw material on hand against the book records?.....
   Any comments .....
   .....

2. Why do you consider that a complete physical inventory is necessary when you have a 100% book inventory for raw materials which is regularly proved by count and measurement?

   A. Auditors require ..... ( )
   B. Management desires ..... ( )
   C. Interim check not sufficiently complete ..... ( )
   D. Interim check not often enough..... ( )
   E. Shrinkages need to be determined to inventory date.. ( )
   F. Accurate perpetual records not possible because of method of issue..... ( )
   G. Other reasons (please explain)..... ( )

   .....
   .....
   .....
   .....

Name .....
Company .....
Chapter .....

in detail. The replies are summarized below in four groups. In the first group are the replies of members who report that the first questionnaire was incorrectly answered and that physical inventories are not taken. The replies in the second group are from members who considered the taking of a monthly, quarterly, semi-annual or annual inventory as a regular check on perpetual records but indicated that there was no checking of book records between physical inventory dates. In the third group are replies from four members who do not consider physical inventories necessary but now take them. The elimination of these three groups leaves 31 replies from members with companies which carry on a continuing check but find physical inventories necessary. There may be some question in the case of some of these companies as to whether the checking as reported is adequate. The reasons given by these members for the taking of physical inventories are given in tabular form and followed by some rather interesting comments made by the cooperating members. The replies to questions 1 and 2 of the above questionnaire are summarized by groups below.

No Complete Physical Inventory Taken—Group I

Reply No. 53:

1. Raw material inventories are written up from cards, using the figures shown by these records at the end of the fiscal year.
2. *Comment:* It now appears that our previous report was in error.

Reply No. 58:

1. We have checkers checking various items of the raw material all the time. When a certain stock of raw material gets down to a low point where it will not necessitate so much labor to get an actual count we take that count and adjust our perpetual inventory accordingly.
2. *Comment:* All of our raw stocks are checked some time just prior to listing the actual inventory. At the time of listing the inventory we do not go out into the factory and warehouse and count the raw materials that we have on hand. We simply take them from our perpetual inventory records which are checked continuously.

   I see no reason why it would be necessary in our case to go into the plant on December 31 or January 1, as the case may be, and take an actual count of every item of raw material for inventory purposes, as we are quite satisfied that the inventory as represented by our books is substantially right at all times.

Reply No. 114:

1. Some once per year only, and others each month.
2. *Comment:* Some misunderstanding here as we regard at least one physical check to be needed, but all items do not need to be checked at the same time.

Reply No. 148:

1. This depends on how fast or slow moving the different inventories are. Some are checked once a year and others as many as six times. We usually check when we reach minimum quantities.

2. *Comment:* We do not close down at the end for a complete physical inventory but instead concentrate on checking most of our slow-moving inventory during the last quarter of the year. Our card records at December 31 are taken as our physical.

Reply No. 181:

1. Major items are checked monthly, other items checked when stock is replenished. Smaller items are checked at inventory time.
2. *Reasons physical inventory considered necessary:*
   a. Interim check not sufficiently complete.
   b. Items that are checked monthly are automatically a part of the physical inventory on the last check of the year.

Book Records Checked Only at Time Physical Inventory Taken—Group II

Reply No. 3:

1. We do not check throughout the year.
2. *Reasons physical inventory considered necessary:*
   a. Interim check not sufficiently complete.
   b. Shrinkage needs to be determined to inventory date.
   c. Accurate perpetual records not possible because of method of issue.
   d. Lack of clerical help and production records makes it necessary to take physical.

Reply No. 32:

1. Four times each year we find it advisable to take a *physical* inventory. In case of any difference between our book records and the physical inventory, we can adjust more readily.
2. *Reasons physical inventory considered necessary:*
   a. Auditors require.
   b. Shrinkages need to be determined to inventory date.

Reply No. 100:

1. Once each year.
2. *Reasons physical inventory considered necessary:*
   a. Auditors require.
   b. Management desires.
   c. Book inventory for raw materials is adjusted only annually by complete physical inventory. Our stock control records do not tie-in with our general ledger controls.

Reply No. 116:

1. Each six months. (Reply to first questionnaire indicates a semi-annual physical inventory taken.)
2. *Reasons physical inventory considered necessary:*
   a. Management desires.
   b. Shrinkages need to be determined to inventory date.

Reply No. 126:

1. On May 31 and October 31.
2. *Reasons physical inventory considered necessary:*
   a. Management requires.
   b. Shrinkages need to be determined to inventory date.
   c. Physical inventories needed in order to verify as closely as possible the actual to book records for insurance valuation report—a condition in fertilizer manufacture.

Reply No. 127:

1. We do it just twice a year and then by physical inventory.
2. *Reason physical inventory considered necessary:*
   a. Our chief inventory items are gold, silver and platinum. Our standards must include shrinkage and refining losses. All concerned therefore desire a complete physical check of book inventories twice a year.

Reply No. 169:

1. No regular check.
2. *Reasons physical inventory considered necessary:*
   a. Management desires.
   b. Interim check not often enough.

Reply No. 177:

1. At the *end* of each quarter.
2. *Reason physical inventory considered necessary:*
   a. Management desires.

Reply No. 189:

1. Monthly.
2. *Reasons physical inventories considered necessary:*
   a. Interim check not sufficiently complete.
   b. Accurate perpetual records not possible because of method of issue.
   c. Persons who handle raw materials are not accurate in record-keeping, although sufficiently so if checked monthly by *physical inventories.*

Reply No. 192:

1. Once each year.
2. *Comment:* Our system does not call for periodical counts. Inventory is taken only once a year.

"Possibly Physical Inventory not Necessary"—Group III

Reply No. 30:

1. Once each year.
2. *Reasons physical inventory considered necessary:*
   a. Interim check not sufficiently complete.
   b. Where a quantity of material is carried constantly it is sometimes difficult to secure interim check. If interim check was available once or twice a year on all articles, I would waive all requirements as to annual inventory.

Reply No. 138:

1. Twice a year.
2. *Reasons physical inventory considered necessary:*
   a. Management desires.
   b. We don't expect to have a fire yet we continue carrying insurance. Don't know of any better way to explain reasons for physical inventories in our case. (In re-

plying to first questionnaire asking whether physical inventories were considered necessary this member replied, "No, but we take one anyway.")

Reply No. 139:

1. Our setup is comparatively new, but we expect to check each item at least once, perhaps oftener.
2. *Comment:* Here again the newness of our system requires a physical inventory to prove and sell it. We definitely expect to discontinue complete physical inventories in the near future.

Reply No. 145:

1. At least four times per year.
2. *Reason physical inventory considered necessary:*
   a. We take physical inventories for policy reasons, even though we make test counts continuously during the year. In my opinion the physical inventory at the end of the year is not necessary, but inasmuch as the management desires to have it done, I have never seriously contested this point. Possibly when the results of your investigation are published, I will be able to secure authority to discontinue the annual physical inventory.

Summary of Replies Regarding Necessity for Physical Inventories—Group IV

Reply No.	Average Number of Times Checked Per Year: No. of Times	Comment References	Reasons Physical Inventories Considered Necessary: Auditors Require	Management Desires	Check Not Complete Enough	Check Not Often Enough	Shrinkage to Inventory Date Needed	Method of Issue Prevents Accurate Records	Comment References
18	2			x			x	x	
41	12							x	
49	4		x	x			x		
52	2				x		x		1
64	3		x						
66	12								2
69	1 or 2			x	x		x		3
71	6		x	x					4
77	2			x			x		5
79		A	x	x			x	x	6
82		B	x		x		x	x	
88		C	x		x				7
89		D						x	8
111	2		x					x	
117	2						x		
119		E		x	x			x	9
120	1							x	
121	12								10
128	2		x	x					11
135	1		x						
155	1		x	x		x			
159	2		x	x	x		x	x	
160		F	x	x					12
163		G		x					13
167	2			x					
168	12			x		x			14
179	2		x	x			x		
185		H	x	x			x		15
193	4	I	x	x				x	16
197	1								17
199	1		x	x			x		18
	Totals from 31 replies		16	18	6	2	12	10	

Comments on Average Number of Times Checked Per Year

Comment A—Varies from every few days for some items to once each month for others. Depends on the rapidity of turnover and volume of materials.

Comment B—Our products are so varied that it is impossible to set any definite time. For instance, oil would be gauged when the tank is almost empty and with 500 tanks of different capacities the checking is a continuous one. Other products are checked once a month and still others three or four times a year, depending upon the products.

Comment C—Barley and malt checked monthly; hops checked every other month.

Comment D—Whenever an item gets to a low point there is a physical check.

Comment E—Rough measurements monthly; weigh-up annually.

Comment F—There is a more or less continuous check. Also, a physical check on slow-moving lots is made twice a year. We have very few adjustments to make.

Comment G—Whenever we run out or the supply gets low enough so that it is easy to count or weigh.

Comment H—We check the general ledger once a year by a physical inventory, at which time weights and values are adjusted. No quantities are carried in the general ledger. Stock records of quantities are checked probably 10 to 20 times a year.

Comment I—In some cases, stocks are very low at close of month and are physically checked to prevent errors.

Comments on Need for Physical Inventories

Comment 1—Due to diversity of goods manufactured we have thousands of classes of raw materials, each of which is checked according to specific requirements.

Comment 2—It is difficult to obtain accurate records from shop personnel. Therefore, it is necessary to make frequent checks.

Comment 3—Human errors make absolutely accurate perpetual inventory impossible.

Comment 4—Interim check not sufficiently complete, as we do not check inactive items regularly.

Comment 5—Some items are sold on theoretical weight and *you cannot roll steel* to exact weight. Inventories are in tons. Bookkeeping errors are corrected in this way. Errors of opinion on which inventory a particular sale refers to are corrected.

Comment 6—Our inventory is made up of a large number of similar materials and the turnover is around fifteen times. However, there are some slow-moving items of special character which may be lost sight of, and frequent substitution makes a physical count advisable.

Comment 7—Nature of raw material does not allow accurate measurement except at certain times.

Comment 8—There are varying weights in sizes of coils of wire rods. It is too expensive to weigh each batch, so they are charged out at average weight per coil. When the stock reaches a low point a check is made.

Comment 9—Book inventories cover only total quantities of each grain. Estimates by rough measurement are made each month to determine proportion of each grade and to check general accuracy of book records, but ordinarily adjustments are made only once a year when complete physical weigh-up is made.

Comment 10—We know that no system no matter how perfect can eliminate all errors because of the human element involved, and we want our records to be kept accurate to the point of perfection. The inventory can be taken in the space of a few hours by three men and the cost is negligible.

Comment 11—To check accuracy of book inventory record.

Comment 12—Inventory should be as of a certain date. It should be counted and checked to obviate book inventory errors. Check book inventory to physical count.

Comment 13—We feel that men are more careful if you have an annual check-up and tell clerks where their figures are not up to standard.

Comment 14—Prevent inventory losses.

Comment 15—Material is costed from stock at a current market valuation. A physical inventory is required to adjust the perpetual inventory to cost or market, whichever is lower.

Comment 16—A perpetual record cannot be sound unless checked often as a clerk may issue a substitute and not change requisition thereby posting to incorrect card.

Comment 17—Our materials are subject to deterioration. Ink, once the can is opened, surface dries like paint causing minor loss. Paper is subject to dust, moisture, etc. Acids like ink evaporate when once opened. Deposit calls for actual stock put in. Issue calls for actual stock taken out. Physical check-up accounts for these minor losses.

Comment 18—Due to special sizes and lots.

Summary

As a result of the information obtained from the answers to the first questionnaire and the replies above, it is possible to make certain generalizations regarding the need for physical inventories. It may be necessary to take a physical inventory of raw materials under the following circumstances:

1. *Where the auditors require or the management desires that physical inventories be taken.* In general, public accountants and corporation officials are more reluctant to discontinue physical inventories than are industrial accountants who are more familiar with the operations of their perpetual inventory systems and more likely to appreciate the lack of necessity for a physical inventory. Here is an opportunity for the industrial accountant who is operating a good perpetual inventory system to sell his company officials and auditors on the possibility of savings arising from the elimination of physical inventories.

2. *Where the unit of measuring raw materials at the time of*

receipt differs from the unit of measurement at the time of issuance. In some industries certain types of raw materials are purchased by the ton and issued by the foot or by the unit. Since a ton of a certain raw material will not always contain the same number of units, it is natural that the stock records will not be completely accurate, and in many cases a physical count at the end of the accounting period is desirable.

3. *Where the raw material is subject to shrinkage or loss while in storage.* In such cases it would seem desirable that such raw materials be physically inventoried at the balance sheet date in order that all shrinkages to that date may be accounted for. However, in some cases it is possible from experience to determine rates of shrinkage and apply these rates to the last physical measurement which was made, without a great sacrifice in accuracy.

4. *Where the raw material is of a type which makes it expensive to make accurate periodic checks.* Thus a flour mill, a manufacturer of stock feed, or a brewery will have difficulty in measuring accurately the quantity of grains in elevators throughout the accounting period because of varying moisture content, settling and other factors. In such a case estimates may be made throughout the accounting period and more accurate measurement applied only at the close of the period.

5. *Where the perpetual inventory records are not checked throughout the accounting period by physical count and measurement.* This is the procedure followed by the companies whose replies are listed in the second section above. In these companies stock records are checked only at the time physical inventories are taken; in other words, quarterly, semi-annual, or annual inventories take the place of continuous check throughout the accounting period. It is obvious that in such cases physical inventories are necessary, otherwise there would be no check on the accuracy of the book records.

6. *Where the perpetual inventory system is not accurate.* No system can be absolutely accurate, but a good perpetual inventory system will usually give as accurate results as can be obtained from a physical inventory. If checks of the stock records indicate frequent and appreciable differences between the inventory figures and the quantities actually on hand due

to errors in keeping the records, reporting receipts, and issuances of raw material and in the measurement of raw material issued, a physical inventory at the end of the accounting period would seem to be necessary to discover all discrepancies which have occurred since the last time that each type of raw material was checked.

In contrast to the above, it would seem that a physical inventory is not likely to be necessary in the following cases:

1. *Where a portion of the raw material usually made up of slow moving items is not controlled by the stock records or where stock records are kept for such slow moving items but are not checked regularly throughout the accounting period.* In such a case it would not appear necessary to take a complete physical inventory but only to physically inventory at the end of the period the items not controlled or not checked regularly. The perpetual inventory records can then be used for that portion of the inventory which is adequately controlled and periodically checked to the book records. This is the procedure described in Reply No. 148 above. Of course, this can only be done if it is possible to accurately eliminate the portion of the inventory which is under control and be certain of including all raw material items in the physical count which are not so controlled.

2. *Where the reason for taking a physical inventory is that the human element makes accurate stock records impossible.* It is obvious that the human element is as important in the taking of a physical inventory as in keeping stock records and periodically checking them. In fact, the necessity for taking a physical inventory in a short period of time requiring the use of inexperienced help is likely to make errors due to the human element more frequent in the taking of a physical inventory than in the keeping of perpetual records.

Apparently the number of times during the year that the inventory records are checked is not an important element in determining whether or not a physical inventory is necessary at the end of the accounting period. Only two members in replying to the questionnaire indicated that physical inventories were neces-

sary because the interim check was not made often enough. In one of these cases the stock records were checked only once during the year while in the other case they were checked twelve times during the year. Apparently the amount of checking which is required will vary according to the type of raw material and the accuracy with which the perpetual inventory records are kept. A company which assembles machinery from purchased parts can control these parts more accurately through stock records than can a chemical plant or a flour mill where the raw material is not divided into definite measurable units and where shrinkage is likely to occur. A lax system of reporting receipts and issuances of raw materials or in properly measuring raw materials when received and issued will require more frequent checking of inventory records to eliminate the necessity for a physical inventory than would be necessary where a more accurate system of perpetual inventory prevails.

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Note: For references on the normal stock and last-in, first-out methods of inventory valuation, see Section I of the Bulletin for March 1, 1937.